AMENDMENTS TO THE CLAIMS

Please amend Claims 3, 6, 9 and 12 as follows.

Please add new Claims 13-16 as follows.

1. (Original) A safety verification device of a reactive system represented by a set of function symbols, a set of rewriting rules, a set of axioms, a set of terms, and a set of terms to be verified, said set of axioms being a set consisting only a commutative law and an associative law, and said safety verification device of a reactive system comprising:

a translation unit generating, under said set of axioms, a first equational tree automaton which accepts said set of terms;

a simulation unit generating, under said set of rewriting rules and said set of axioms and using said first equational tree automaton as initial data, a second equational tree automaton which accepts said set of terms and a set comprising terms derived from said set of terms; and

a set operation unit which generates a fourth equational tree automaton by associating said second equational tree automaton with a third equational tree automaton which accepts said set of terms to be verified and determines whether or not a set accepted by the fourth equational tree automaton is an empty set.

2. (Original) A safety verification device of a reactive system represented by a set of function symbols, a set of rewriting rules, a set of axioms, a set of terms, and a term to be verified, said set of axioms being a set consisting only a commutative law and an associative law, and said safety verification device of a reactive system comprising:

a translation unit generating, under said set of axioms, a first equational tree automaton which accepts said set of terms;

a simulation unit generating, under said set of rewriting rules and said set of axioms and using said first equational tree automaton as initial data, a second equational tree automaton which accepts said set of terms and a set comprising terms derived from said set of terms; and

a set operation unit determining whether or not said second equational tree automaton accepts said term to be verified.

3.   (Currently amended) A safety verification device of a reactive system according to claim 1 ~~or 2~~, wherein said set of function symbols is a set comprising function symbols representing encryption, decryption and communication processing as elements,

said set of rewriting rules is a set comprising as an element a rule representing that encrypted information is returned to plaintext by decryption,

said term to be verified is confidential information, and

said set of terms is a set of knowledge of each of subjects that exchange confidential information, and a set of knowledge of a subject that monitors the information exchanged between said subjects.

4.   (Original) A safety verification method of a reactive system represented by a set of function symbols, a set of rewriting rules, a set of axioms, a set of terms, and a set of terms to be verified, said set of axioms being a set consisting only a commutative law and an associative law, and said method comprising:

a first step of generating, under said set of axioms, a first equational tree automaton which accepts said set of terms;

a second step of generating, under said set of rewriting rules and said set of axioms and using said first equational tree automaton as initial data, a second equational tree automaton which accepts said set of terms and a set of terms derived from said set of terms; and

a third step of generating a fourth equational tree automaton by associating said second equational tree automaton with a third equational tree automaton which accepts said set of terms to be verified and determining whether or not a set accepted by the fourth equational tree automaton is an empty set.

5.   (Original) A safety verification method of a reactive system represented by a set of function symbols, a set of rewriting rules, a set of axioms, a set of terms, and a term to be verified, said set of axioms being a set consisting only a commutative law and an associative law, and said method comprising:

a first step of generating, under said set of axioms, a first equational tree automaton which accepts said set of terms;

a second step of generating, under said set of rewriting rules and said set of axioms and using said first equational tree automaton as initial data, a second equational tree automaton which accepts said set of terms and a set of terms derived from said set of terms; and

a third step of determining whether or not said second equational tree automaton accepts said term to be verified.

6.   (Currently amended) A safety verification method of a reactive system according to claim 4 or 5, wherein said set of function symbols is a set comprising function symbols representing encryption, decryption and communication processing as elements,

said set of rewriting rules is a set comprising as an element a rule representing that encrypted information is returned to plaintext by decryption,

said term to be verified is confidential information, and

said set of terms is a set of knowledge of each of subjects that exchange confidential information, and a set of knowledge of a subject that monitors the information exchanged between said subjects.

7.   (Original) A computer-readable recording medium containing a reactive system safety verification computer program, comprising:

a first program code which accepts an input of a procedure represented by a set of function symbols, a set of rewriting rules, a set of axioms, a set of terms, and a set of terms to be verified;

a second program code which generates, under said set of axioms consisting only of a commutative law and an associative law, a first equational tree automaton which accepts said set of terms;

a third program code which generates, under said set of rewriting rules and said set of axioms and using said first equational tree automaton as initial data, a second equational tree automaton which accepts said set of terms and a set of terms derived from said set of terms; and

a fourth program code which generates a fourth equational tree automaton by associating said second equational tree automaton with a third equational tree automaton which accepts said set of terms to be verified and determines whether or not a set accepted by the fourth equational tree automaton is an empty set.

8.   (Original) A computer-readable recording medium containing a safety verification computer program, comprising:

a first program code which accepts an input of a procedure represented by a set of function symbols, a set of rewriting rules, a set of axioms, a set of terms, and a term to be verified;

a second program code which generates, under said set of axioms consisting only of a commutative law and an associative law, a first equational tree automaton which accepts said set of terms;

a third program code which generates, under said set of rewriting rules and said set of axioms and using said first equational tree automaton as initial data, a second equational tree automaton which accepts said set of terms and a set of terms derived from said set of terms; and

a fourth program code which determines whether or not said second equational tree automaton accepts said term to be verified.

9.   (Currently amended) A computer-readable recording medium containing a reactive system safety verification computer program according to claim 7 ~~or 8~~, wherein said set of function symbols is a set comprising function symbols representing encryption, decryption and communication processing as elements,

said set of rewriting rules is a set comprising as an element a rule representing that encrypted information is returned to plaintext by decryption,

said term to be verified is confidential information, and

said set of terms is a set of knowledge of each of subjects that exchange confidential information, and a set of knowledge of a subject that monitors the information exchanged between said subjects.

10.   (Original) A computer program data signal embodied in a carrier wave for reactive system safety verification, comprising:

a first program code which accepts an input of a procedure represented by a set of function symbols, a set of rewriting rules, a set of axioms, a set of terms, and a set of terms to be verified;

a second program code which generates, under said set of axioms consisting only of a commutative law and an associative law, a first equational tree automaton which accepts said set of terms;

a third program code which generates, under said set of rewriting rules and said set of axioms and using said first equational tree automaton as initial data, a second equational tree automaton which accepts said set of terms and a set of terms derived from said set of terms; and

a fourth program code which generates a fourth equational tree automaton by associating said second equational tree automaton with a third equational tree automaton which accepts said set of terms to be verified and determines whether or not a set accepted by the fourth equational tree automaton is an empty set.

11.   (Original) A computer program data signal embodied in a carrier wave for reactive system safety verification, comprising:

a first program code which accepts an input of a procedure represented by a set of function symbols, a set of rewriting rules, a set of axioms, a set of terms, and a term to be verified;

a second program code which generates, under said set of axioms consisting only of a commutative law and an associative law, a first equational tree automaton which accepts said set of terms;

a third program code which generates, under said set of rewriting rules and said set of axioms and using said first equational tree automaton as initial data, a second equational tree automaton which accepts said set of terms and a set of terms derived from said set of terms; and

a fourth program code which determines whether or not said second equational tree automaton accepts said term to be verified.

12.   (Currently amended) A computer program data signal embodied in a carrier wave for reactive system safety verification according to claim 10 or 11, wherein said set of function symbols is a set comprising function symbols representing encryption, decryption and communication processing as elements,

said set of rewriting rules is a set comprising as an element a rule representing that encrypted information is returned to plaintext by decryption,

said term to be verified is confidential information, and

said set of terms is a set of knowledge of each of subjects that exchange confidential information, and a set of knowledge of a subject that monitors the information exchanged between said subjects.

13.   (New) A safety verification device of a reactive system according to claim 2, wherein said set of function symbols is a set comprising function symbols representing encryption, decryption and communication processing as elements,

said set of rewriting rules is a set comprising as an element a rule representing that encrypted information is returned to plaintext by decryption,

said term to be verified is confidential information, and

said set of terms is a set of knowledge of each of subjects that exchange confidential information, and a set of knowledge of a subject that monitors the information exchanged between said subjects.

14.   (New) A safety verification method of a reactive system according to claim 5, wherein said set of function symbols is a set comprising function symbols representing encryption, decryption and communication processing as elements,

said set of rewriting rules is a set comprising as an element a rule representing that encrypted information is returned to plaintext by decryption,

said term to be verified is confidential information, and

said set of terms is a set of knowledge of each of subjects that exchange confidential information, and a set of knowledge of a subject that monitors the information exchanged between said subjects.

15.   (New) A computer-readable recording medium containing a reactive system safety verification computer program according to claim 8, wherein said set of function symbols is a set comprising function symbols representing encryption, decryption and communication processing as elements,

said set of rewriting rules is a set comprising as an element a rule representing that encrypted information is returned to plaintext by decryption,

said term to be verified is confidential information, and

said set of terms is a set of knowledge of each of subjects that exchange confidential information, and a set of knowledge of a subject that monitors the information exchanged between said subjects.

16.   (New) A computer program data signal embodied in a carrier wave for reactive system safety verification according to claim 11, wherein said set of function symbols is a set comprising function symbols representing encryption, decryption and communication processing as elements,

said set of rewriting rules is a set comprising as an element a rule representing that encrypted information is returned to plaintext by decryption,

said term to be verified is confidential information, and

said set of terms is a set of knowledge of each of subjects that exchange confidential information, and a set of knowledge of a subject that monitors the information exchanged between said subjects.